

## Book Problem

Let  $x$ ,  $y$ ,  $z$ , be respectively the prizes of the Science Books, History Books, and Atlases. Then, the conditions of the problem could be written as

$$x + y + z = 100$$

$$x > 2y$$

$$3y > 4z$$

$$3z > 4x$$

Resolving the equation for  $z$  we have

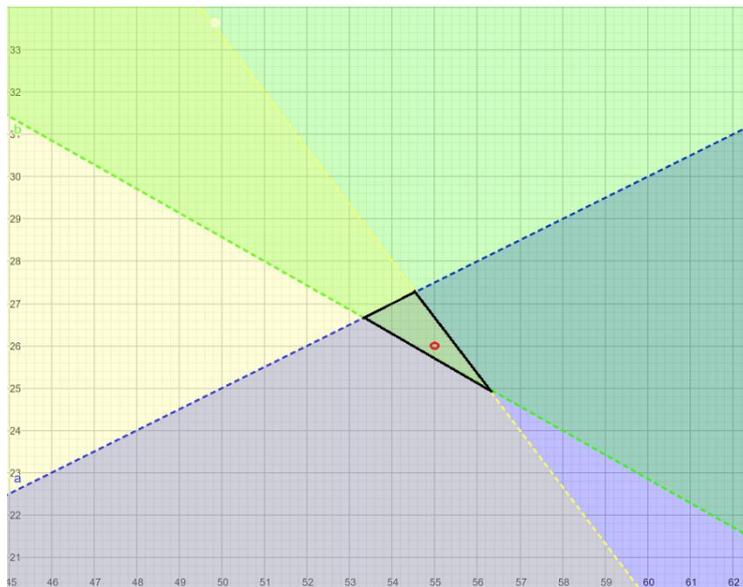
$$z = 100 - x - y$$

Substituting now  $z$  in second and third inequalities, we get a new inequality system:

$$y < \frac{x}{2}$$

$$y > \frac{400}{7} - \frac{4}{7}x$$

$$y < 100 - \frac{4}{3}x$$



Representing these inequalities in the Cartesian plane, it could be seen that there is only one integer solution to the problem (see the black triangle with the solution area for real numbers, and the red circle for the integer one), and it is  $x = 55$ ,  $y = 26$ ,  $z = 19$ .

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